CLAIMS

WHAT IS CLAIMED IS:

1. A method for determining an affinity of a first nucleobase-containing sequence for a second nucleobase-containing sequence, said method comprising:

providing a test medium containing said first nucleobase-containing sequence and said second nucleobase-containing sequence, wherein said first nucleobase-containing sequence and said second nucleobase-containing sequence are of different lengths;

applying a voltage across said test medium;

measuring a test electric current through said test medium; and

determining said affinity by evaluating whether said test electric current is equivalent to a reference electric current of a reference medium containing a longer of said first nucleobase-containing sequence and said second nucleobase-containing sequence.

2. The method of claim 1, wherein said first nucleobase-containing sequence and said second nucleobase-containing sequence are single-stranded, and said first nucleobase-containing sequence has no affinity for said second nucleobase-containing sequence when said test electric current is more than said reference electric current.

3. The method of claim 1, wherein said first nucleobase-containing sequence and said second nucleobase-containing sequence are single-stranded, and said first nucleobase-containing sequence has affinity for said second nucleobase-containing sequence when said test electric current is equivalent to said reference electric current.

4. The method of claim 3, wherein said affinity is parallel homologous bonding, antiparallel homologous bonding, parallel complementary bonding or antiparallel complementary bonding.

5. The method of claim 3, wherein said affinity is non-bonding association.

6. The method of claim 1, wherein said first nucleobase-containing sequence and said second nucleobase-containing sequence are double-stranded, and said first nucleobase-containing sequence has no affinity for said second nucleobase-containing sequence when said test electric current is equivalent to said reference electric current.

7. The method of claim 1, wherein said first nucleobase-containing sequence and said second nucleobase-containing sequence are double-stranded, and said first nucleobase-containing sequence has affinity for said second nucleobase-containing sequence when said test electric current is more than said reference electric current.

8. The method of claim 7, wherein said affinity is parallel homologous bonding, antiparallel homologous bonding, parallel complementary bonding or antiparallel complementary bonding.

9. The method of claim 7, wherein said affinity is non-bonding association.

10. A complex in an electrically stimulated phase comprising at least two nucleobase-containing sequences in a medium, wherein the electrical conductivity of the medium increases linearly without a plateau as the temperature of the medium approaches and exceeds a Tm of the complex.

11. The complex of claim 10, wherein the electrical conductivity of a medium containing the complex in an electrically unstimulated phase plateaus as the temperature of the medium approaches and exceeds the Tm of the complex.

12. The complex of claim 10, at a temperature above the Tm of the complex.

13. The complex of claim 10, wherein the at least two nucleobase-containing sequences are bonded together by Watson-Crick complementary base bonding.

14. The complex of claim 10, wherein the at least two nucleobase-containing sequences are bonded together by homologous base bonding.

15. The complex of claim 10, wherein the at least two nucleobase-containing sequences are not bonded together by Watson-Crick complementary base bonding or by homologous base bonding.